Grade 4 Math

Subclaim: Major Content

The standard designation is included preceding each evidence statement.
Evidence Statements may:
1. Use exact standard language
2. Be derived by focusing on specific parts of a standard
3. Be integrative - the testing of more than one of the standards on a single item/task without going beyond the standards to create new requirements

Evidence Statements	Clarifications	Relationship to Mathematical Practices
Operations and Algebra (OA)		
4.OA 1.1 Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5.	•Tasks have "thin context" or no context.	MP.2 MP.4
4.OA 1.2 Represent verbal statements of multiplicative comparisons asmultiplication equations.	•Tasks have "thin context" or no context.	MP.2 MP.4
4.OA 2 Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.		MP.1 MP.4 MP.5
4.OA 3.1 Solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations.	•Assessing reasonableness of answer is not assessed here. •Tasks do not involve interpreting remainders.	MP.1 MP.2 MP.7
4.OA 3.2 Solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations, in which remainders must be interpreted.	•Assessing reasonableness of answer is not assessed here. •Tasks involve interpreting remainders.	MP.1 MP.2 MP.4
Numbers and Operations Base Ten (NBT)		
4.NBT.1 Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.		MP.7
4.NBT.2 Read and write multi-digit whole numbers using base-ten numerals,number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =,and < symbols to record the results of comparisons.	•Tasks assess conceptual understanding, e.g. by including a mixture of expanded form, number names, and base ten numerals within items.	MP.7

4.NBT.3 Use place value understanding to round multi-digit whole numbers to any place.	• Grade 4 expectations are limited to whole numbers less than or equal to 1,000,000	MP.7
4.NBT.4.1 Fluently add multi-digit whole numbers using the standard algorithm.	•The given addends are such as to require an efficient/standard algorithm (e.g., 7263 + 4875). Addends in the task do not suggest any obvious ad hoc or mental strategy (as would be present for example in a case such as 16,999 + 3,501). •Tasks do not have a context. •Grade 4 expectations in CCSSM are limited to whole numbers less than or equal to 1,000,000; for purposes of assessment, both of the given numbers should have 4 digits. •Tasks are not timed.	
4.NBT.4.2 Fluently subtract multi-digit whole numbers using the standard algorithm.	•The given subtrahend and minuend are such as to require an efficient/standard algorithm (e.g.,7263 – 4875 or 7406 – 4637). The subtrahend and minuend do not suggest any obvious ad hoc or mental strategy (as would be present for example in a case such as 7300 – 6301). •Tasks do not have a context. • Grade 4 expectations in CCSSM are limited to whole numbers less than or equal to 1,000,000; for purposes of assessment, both of the given numbers should have 4 digits. •Tasks are not timed	
4.NBT.5.1 Multiply a whole number of up to four digits by a one-digit whole number using strategies based on place value and the properties of operations.	•Tasks do not have a context. •For the illustrate/explain aspect of 4.NBT.5, see 4.C.1-1	MP.7
4.NBT.6.1 Find whole-number quotients and remainders with three-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division.	•Tasks do not have a context. •Tasks may include remainders of 0 in no more than 20% of the tasks. •For the illustrate/explain aspect of 4.NBT.6, see 4.C.1-2 and 4.C.2	MP.7 MP.8
4.NBT.6.2 Find whole-number quotients and remainders with four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division.	•Tasks do not have a context. •Tasks may include remainders of 0 in no more than 20% of the tasks. •For the illustrate/explain aspect of 4.NBT.6, see 4.C.1-2 and 4.C.2	MP.7 MP.8
4.NBT.Int.1 Perform computations by applying conceptual understanding of place value, rather than by applying multi-digit algorithms.	•Tasks do not have a context	MP.1 MP.7
Numbers and Operations Fractions (NF)		

4.NF.1.2 Use the principle a/b = (nxa)/(nxb) to recognize and generate equivalent fractions.	•The explanation aspect of 4.NF.1 is not assessed here. •Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. •Tasks may include fractions that equal whole numbers. Whole numbers are limited to 0 through 5	MP.7
4.NF2.1 Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or by comparing to a benchmark fraction such as 1/2. Record the results of comparisons with symbols >, =, or <.	•Only the answer is required. •Tasks require the student to choose the comparison strategy autonomously. •Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. •Tasks may include fractions that equal whole numbers. Whole numbers are limited to 0 through 5	MP.6 MP.7
4.NF.A.Int.1 Apply conceptual understanding of fraction equivalence and ordering to solve simple word problems requiring fraction comparison. Content Scope: 4.NF.A	•Tasks have "thin context." •Tasks do not require adding, subtracting, multiplying, or dividing fractions. •Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. •Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. • Tasks may include fractions that equal whole numbers. Whole numbers are limited to 0 through 5.	MP.1 MP.4 MP.5
4.NF.3a Understand a fraction a/b with a > 1 as a sum of fractions 1/b. a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.	•Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.	MP.2 MP.7 MP.8
4.NF.3b.1 Understand a fraction a/b with a > 1 as a sum of fractions 1/b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Examples: 3/8 = 1/8 + 1/8 + 1/8; 3/8 = 1/8 + 2/8; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.	•Only the answer is required. •Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. •Tasks may include fractions that equal whole numbers. Whole numbers are limited to 0 through 5.	MP.7 MP.8
4.NF.3c Understand a fraction a/b with a > 1 as a sum of fractions 1/b. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.	•Tasks do not have a context. •Denominators are limited to grade 3 possibilities (2, 3, 4, 6, 8) so as to keep computational difficulty lower.	MP.7
4.NF.3d Understand a fraction a/b with a>1 as a sum of fractions 1/b. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.	•Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. •Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.1 MP.4 MP.5
4.NF.4a Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. Understand a fraction a/b as a multiple of 1/b. For example, use a visual fraction model to represent 5/4 as the product 5 x (1/4), recording the conclusion by the equation 5/4 = 5 x (1/4).	•Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100	MP.5 MP.7

4.NF.4b.1 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. Understand a multiple of a/b as a multiple of 1/b. For example, use a visual fraction model to express 3 x (2/5) as 6 x (1/5).	•Tasks do not have a context. •Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. •Results may equal fractions greater than 1 (including fractions equal to whole numbers limited to 0 through 5). •Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100	MP.5 MP.7
4.NF.4b.2 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. Use the understanding that a multiple of a/b is a multiple of 1/b to multiply a fraction by a whole number. For example, use a visual fraction model to express 3 x (2/5) as 6/5. (In general, n x (a/b) = (nxa)/b.)	•Tasks do not have a context. •Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. •Tasks involve expressing a/b as a multiple of a/b as a fraction. •Results may equal fractions greater than 1 (including fractions equal to whole numbers limited to 0 through 5). •Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.	MP.5 MP.7
4.NF.4c Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?	•Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. •Situations are limited to those in which the product is unknown (situations do not include unknown factors). •Situations involve a whole number of fractional quantities—not a fraction of a whole-number quantity. •Results may equal fractions greater than 1 (including fractions equal to whole numbers). •Results may equal fractions greater than 1 (including fractions equal to whole numbers limited to 0 through 5). •Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.	MP.1, MP.4, MP.5
4.NF.5 Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.	•Tasks do not have a context	MP.7
4.NF.6 Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.	•Measuring to the nearest mm or cm is equivalent to measuring on the number line	MP.7
4.NF.7 Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.	•Tasks have "thin context" or no context. •Justifying conclusions is not assessed here. •Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy	MP.5, MP.7
4.NF.Int.1 Solve one-step word problems requiring integration of knowledge and skills articulated in 4.NF. Content Scope: 4.NF	•Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.	MP.1, MP.4

4.NF.Int.2 Solve one-step addition word problems. Content Scope: 4.NF.5, 4.NF.6		MP.5, MP.8
Word Problems (Int)		
4.Int.2 Solve one-step word problems involving multiplying two two-digit numbers.	•The given numbers are such as to require a general strategy based on place value and the properties of operations (e.g., 63 x 44). •Word problems shall include a variety of grade-level appropriate applications and contexts.	MP.1, MP.7
4.Int.3 Solve multi-step word problems posed with whole numbers and involving computations best performed by applying conceptual understanding of place value, perhaps involving rounding. Content Scope: 4.OA.3, 4.NBT	•The given numbers are such as to require a general strategy based on place value and the properties of operations (e.g., 2392 x 8). •Word problems shall include a variety of grade-level appropriate applications and contexts.	MP.1, MP.7
4.Int.4 Solve one-step word problems involving dividing a four-digit number by a one-digit number.	•The given numbers are such as to require a general strategy based on place value and the properties of operations (e.g., 2328 ÷ 8). •Quotients are whole numbers (i.e., there are no remainders). •Word problems shall include a variety of grade-level appropriate applications and contexts.	MP.1, MP.7
4.Int.5 Solve multi-step word problems posed with whole numbers and involving computations best performed by applying conceptual understanding of place value, perhaps involving rounding. Content Scope: 4.OA.3, 4.NBT	•Multi-step problems must have at least 3 steps. •Tasks must be aligned to the first standard and 1 or more of the subsequent standards listed in the content scope.	MP.1, MP.2, MP.7
4.Int.6 Solve real-world and mathematical problems about perimeter involving grade-level addition and subtraction of fractions, such as finding an unknown side of a rectangle. Content Scope: 4.NF.3, 4.MD.3	•Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. •Tasks must be aligned to both standards listed in the content scope.	MP.1, MP.5, MP.5
4.Int.7 Solve one-step word problems involving adding or subtracting two four-digit numbers.	•The given numbers are such as to require an efficient/standard algorithm (e.g., 7263 + 4875, 7263 – 4875, 7406 – 4637). The given numbers do not suggest any obvious adhoc or mental strategy (as would be present, for example, in a case such as 6,999 + 3,501 or 7300 – 6301). •Word problems shall include a variety of grade-level appropriate applications and contexts.	
4.Int.8 Solve addition and subtraction word problems involving three four-digit addends, or two four-digit addends and a four-digit subtrahend.	•The given numbers are such as to require an efficient/standard algorithm (e.g., 7263 + 4875 + 6901). The given numbers do not suggest any obvious ad hoc or mental strategy (as would be present, for example, in a case such as 6,999 + 3,501 - 5,000).	